Biological Diversity and Tropical Forestry Analysis
FAA 118/119 Annex
USAID/Morocco Strategic Plan FY 2004-2008

Executive Summary

Morocco possesses extensive natural resources, including vast areas for agricultural production, high quality pelagic fish, phosphates, and coastlines and deserts well suited for coastal and adventure tourism. Major environmental issues are emerging, especially regarding water shortage. There are also serious concerns about deforestation, soil erosion and industrial effluent.

USAID/Morocco prepared and presented a concept for a Strategic Plan for the period FY2002-2008 on November 22, 2002. The parameters cable summarized "The mission needs to develop a core EG strategy featuring one EG SO…"

USAID is legally obligated to conduct assessments of tropical forestry and biological diversity in accordance with the requirements of Sections 118 and 119 of the Foreign Assistance Act. This Washington, DC-based desk study, therefore, provides access to reference information, government of Morocco actions and support by USAID and other donors to the conservation of tropical forests and biological diversity, all intended to inform the strategy development process.

Forests are generally in a mediocre and deteriorating condition. The most valuable forests have largely been cleared and those that remain are old and in poor condition. Production does not meet national demand, and techniques are rudimentary, leading to loss of value. The needs of local people in forest areas for firewood, grazing and other forest uses have led to degradation of the herbaceous plant cover and to over-exploitation of woods and pastures.

The principal threats to biodiversity are habitat transformation, fragmentation and degradation, due to increasing population pressures and poor management of natural resources.

The government of Morocco with the assistance of the World Bank and the Global Environment Facility have active and in development projects for forestry development and protected area management.

The USAID planned focus of promoting economic growth and international trade provide multiple opportunities to achieve those goals while protecting forest resources and biodiversity.

The linkages with Agriculture, including fish, include protecting land races of crops, and conducting activities in an environmentally sound manner. In the promotion of tourism, the scenic and wild places tourists come to visit need to be protected from being soiled while at the same time tourism will have to be managed so that increased use of fragile environments does not lead to their deterioration.

1 Introduction

Morocco is relatively privileged in terms of geography and natural conditions. Morocco owes its natural endowment to the Rif and Atlas Mountains, which block the course of, and retain, humid air currents originating in the Atlantic Ocean while at the same time the Atlas mountains shelter the Atlantic plain from the arid southern winds from the Sahara. Mountain rainfall resulting from dynamic pressure and orographic ascent and forests, which presently cover roughly 5.2 million ha of its territory, ensure the country's water resources. Thus, for instance, Morocco has

rivers that bear water throughout the year, and these provide the conditions necessary for relatively secure irrigated farming. These comparatively favorable natural conditions are supplemented by an economic production structure rooted in history (dominated even today by agriculture and small industries), and these factors have likewise contributed to placing Morocco in a position relatively advantageous in terms of the environmental effects they entail.

In Morocco the acceleration of economic and demographic development (together with rapid urbanization, growing industrialization, and the emergence of export-intensive irrigated agriculture) has, in the past two decades especially, stepped up the pressures on the environment and natural resources, triggering a process of increasing degradation.

The most important features of this degradation process are a growing shortage of water resources accompanied by deterioration of water quality, widespread soil erosion (with an estimated annual loss of 20–25,000 ha of arable land), increasing deforestation (by some 50,000 ha of forest per year), desertification, air pollution, and growing risks to the loss of biological diversity. Part of the damage that has occurred is regarded by experts as irreversible.

Morocco also has considerable maritime resources, including high quality white fish and cephalopods, which are increasingly in demand at a global level. With many competing suppliers suffering from depleted fish resources, Moroccan fish exports, especially to the nearby EU market, could grow rapidly, given appropriate resource management and adequate licensing of new vessels.

The tourism industry, heavily promoted by the Moroccan government and with a growing quality infrastructure, is expected to be an important source of growth and employment in coming years. The effects of tourism on the environment and environmental quality effects on tourism need to be closely monitored.

The acuteness of the environmental problems facing the country, and the fact that they are growing in spite of the favorable situation just sketched, have, under the influence of the intensified international discussion, also led Morocco to formulate official environmental and resource protection policies, which have attracted growing attention. Morocco's environmental policy has on the whole, however, not been able to keep pace with the emerging challenges.

Given population growth, and with unchanged usage patterns, water availability per capita will have been halved by 2020. The alarming trend in water scarcity reflects the lack of a strategy for rational water use to ensure sustainability. The agricultural sector, dominated by cereals, is protected through trade restrictions, tax exemptions, price support and subsidies, including for water. These measures have resulted in an inefficient allocation of scarce water resources: irrigated agriculture currently uses 92% of all mobilized water in Morocco, with the remainder left for household and industrial use. Frequent droughts have aggravated the shortages and further accentuated the need for a new approach in water management, with a more balanced distribution of water use and with adequate pricing and cost recovery to ensure sustainability.

2 Context of the Strategic Plan for USAID/Morocco (FY 2005-FY 2008)

USAID/Morocco prepared and presented a concept for a Strategic Plan for the period

FY2002-2008 on November 22, 2002. The parameters cable summarized “The mission needs to develop a core EG strategy featuring one EG SO with DA funding of $5.4 million in FY 2004 and $6.5 million in the out-years (FY 2005-FY 2008). Anticipated additional ESF resources of $2 million annually or more can either be programmed within the core EG SO, or used to develop additional SOs in the MEPI priority areas of DG and ED. If ESF/MEPI resources significantly above $2 million become available, this would enhance the argument for developing additional SOs”

USAID is legally obligated to conduct assessments of tropical forestry and biological diversity in accordance with the requirements of Sections 118 and 119 of the Foreign Assistance Act. The amendments require that assessments of tropical forests and biological diversity be prepared on a country-specific basis, be reflected in USAID's strategy document for each country, and addressed in annual reports covering progress on strategic objectives. Specifically, “Each country development strategy statement or other country plan prepared by the Agency for International Development shall include an analysis of: 1.The actions necessary in that country to achieve conservation and sustainable management of tropical forests, and 2.The extent to which the actions proposed for support by the agency meet the needs thus identified” (See ADS 201.3.8.2 Environmental Analysis Effective date 01/31/2003.

Furthermore Section 117 emphasizes the need for the United States to exercise leadership in reassessing policies related to the environment and natural resources and in "cooperating extensively with developing countries in order to achieve environmentally sound development." To achieve this goal, the section indicates that: "Special efforts shall be made to maintain and where possible to restore the land, vegetation, water, wildlife, and other resources upon which depend economic growth and human well-being, especially of the poor." The section also requires USAID to "take fully into account" the impact of its activities on the environment and natural resources of developing countries.

This Washington, DC-based desk study, therefore, provides access to reference information, government of Morocco actions and support by USAID and other donors to the conservation of tropical forests and biological diversity, all intended to inform the strategy development process.

Extensive, though now dated, 118/119 reviews were conducted by S.A. Parker (1980) and Duvall (1988). In 1995 the USAID Project in Development and the Environment (PRIDE) produced “Environmental Options Assessment for Morocco” covering the broad environmental area. The government of Morocco Accomplishment Report on Agenda 21 and Sustainable Development Information on Morocco provide overview information on Moroccan environmental policies and institutions.

The United States Trade Representative (USTR) under Executive Order 13277 (November 21, 2002), is required to submit an Environmental Review of U.S. Free Trade Agreements as required under section 2102(c)(4) of the Trade Act of 2002 (Trade Act). The process is intended to provide timely information that will enable trade policymakers and negotiators to understand the environmental implications of possible courses of action. This desk study should also provide background information for that review for the planned US-Morocco FTA now under negotiations.

3 Forest resources

Forests are generally in a mediocre and deteriorating condition. The most valuable forests have largely been cleared and those that remain are old and in poor condition. Production does not meet national demand, and techniques are rudimentary, leading to loss of value. The needs of local people in forest areas for firewood, grazing and other forest uses have led to degradation of the herbaceous plant cover and to over-exploitation of woods and pastures.

In Morocco, "Forestry Domain" encompasses:

- domanial/state-owned forests,
- land covered of alfalfa grass (*Stipa tenacissima*),
- inland and maritime sand dunes,
- man-made plantations,
- nurseries situated in the domanial forests, and on the lands which are afforested or to be afforested, and
- forestry posts and offices.

Around 98% of the forests in Morocco are state-owned(domanial); the remaining 2% are private (Ellatifi, 2002). This situation finds its explanation in the Dahir of 1917, which constitutes the Forest Law in Morocco. According to this Dahir, any wooded area in Morocco is presumed state-owned. This presumption is to be confirmed and officialized by a delimitation process which is carried out by a commission formed of the forest service, the local authorities(Ministry of Interior), and the representative of local communities. This commission is habilitated to receive any complaint or opposition regarding the forest delimitation laying out, established by the forest service. If no amicable arrangement is found, the tribunal is the competent body to take the final decision .

The Forest Department is the governmental body which is responsible for:

- Forest conservation and management
- Wildlife conservation and management
- Pisciculture in terrestrial waters
- Forest, hunting and fishing police
- Afforestation in the forestry domain
- Erosion control (Combating wind and water erosion)
- Forestry research and experimentation.

Major forest species in Morocco

Species	Covered Area (in Ha)	Percentage of total forestry Area
A. Natural forests		
A.1. Coniferous		
- *Cedrus atlantics*	131,800	
- *Tetraclinis articulata*	565,798	
- *Pinus spp.*	678,714	
- *Juniperus spp.*	244,819	
- *Abies pinsapo*	3,174	

- Other coniferous	5,764	
Total Coniferous	1,630,069	17.2%
.2. Broadleaved		
- *Quecus ilex*	1,364,100	
- *Q. suber*	348,200	
- *Q. faginea*	9,091	
- *Argania spinosa*	828,300	
- Other Broadleaved	1,112,300	
Total Broadleaved	3,661,991	38.6%
A.3. Mattorals/Maquis	402,435	4.2%
A.4 Sparto grass(*Stipa tenacissima*)	3,272,659	34.4%
Total Natural forests	8,967,154	94.4%
B. Man-made Plantations		
B.1. Coniferous	201,400	
B.2. Broadleaved	328,600	
Total Plantations	530,000	5.6%
TOTAL FORESTS	9,497,154	100%

Non-wood Forest Products (NWFPs) are very important in Morocco. They are collected by local people, and some of them are officially sold by the Forest department. But many other collected NWFPs have not been valuated at market price yet. This remains to be undertaken. Here are some NWFPs for which data are available regarding the quantity collected and the value(Table 2).

Non-Wood Forest Products(NWFPs) and their Direct Use Values at market price

Type of NWFP	Quantitative valuation	Monetary Value market price(US$)
Cork(first harvest)	50,000 st	5,500,000
Cork(other harvests)	100,000 st	4,000,000
Sparto grass	50,000 tons	50,000
Honey	4,000 tons	20,000,000
Mushrooms	1,000 tons	6,300,000
-*Artemisia herba herba*	1,500 tons	135,000
-Rosemary	40 tons	21,600
-Briar stumps	460 tons	23,000
-Tan bark of *Acacia mollissima*	3,500 tons	210,000
-Myrtle	300 tons	100,000
-Lichen	1,030 tons	51,500
-Caro beans	900 tons	37,500
-Dry Fern	500 tons	10,000
-Gum sandarac	1,500 Kg	1,200

a) Grazing	2,300,000,000 FU Inputted Monetary Value: $0.135 for one Fodder Unit(FU)	310,500,000
a) Hunting	Number of hunters: 30,000 to 50,000 Imputed monetary value: $1 per ha of forest	9,497,000

Source: Ellatifi (unpublished), MARA/DEFCS(1994).

There is an important rural population living in the vicinity of the forests throughout the country. The Moroccan forest law recognizes rights, customs and practices to the local communities called "riverains". Two major rights should be underlined; these\are:

- Free collection of dead fuel wood for their domestic use, and
- Grazing for their domestic livestock, against a symbolic monetary tax.

Nevertheless, for the forest regeneration purpose, these riverains should not graze in areas in regeneration, which should not exceed 20% of the total forest area.

Two other special rights are recognized to the riverains; these are:

- Branch cutting for domestic livestock feeding during snowy periods, and
- Agroforestry practice in Argan forest(*Argania spinosa* L.). In this context the riverains have the right to collect Argan fruits, and cultivate crops in the Argan forest.

All these rights, and others, are regulated by the following legislative texts (Ellatifi, unpublished):

- Dahir of 10 October 1917 on forest conservation and harvesting. This Dahir constitutes the Moroccan Forest Code,
- Vizirial Decree of 15 April 1946, related to silvopastoral regime,
- Dahir of 4 March 1925, forming special statute of the Argan forest,
- Decision of 1st May 1938, jointly taken by the Director of Political Affairs and the Director of Waters and Forests, regulating users' rights in the Argan forest
- Decision of 22 June 1936, jointly taken by the Director of Political Affairs and the Director of Waters and Forests, detailing the exercise of user's rights.

Local communities in Morocco have always been interested by "their" forests with which they have always lived in a sort of harmony, with some excess sometimes(overgrazing, illicit cutting, etc.)(Ellatifi, 2000).

In 1976 that another Dahir was enacted to officially and clearly involve local communities in the development of the forest economy. This legislative text gave more latitude to the communities' representatives to participate, beside the forest service, to the management of "their" forests(management plans, reforestation, timber and non-timber products harvesting, grazing management in forest, forest protection, etc.). Furthermore, this legislative text states that all the income

generated by the forests growing on the territory of a commune should be paid to that commune, with the condition that at least 20% of the paid sums should invested by the commune in the forest development. Within this framework, two follow-up bodies were created: the National Forest Council, and the Provincial Forest Council. Both are enabled to take part in the forest management, as well as to exercise the monitoring, follow-up and evaluation of all development activities carried out by the forest service. For this purpose they hold a meeting every year, to examine the forest situation and issue recommendations

The conservation of forest genetic resources is mainly conducted as *in situ* conservation within the reserves and protected areas. This has been reinforced with some complementary ex situ conservation activities. At present, 40 nurseries (Arboretum) of an area of 400 ha maintaining 114 populations of native and exotic forest trees were established.

Other supporting activities to the conservation of forest genetic resources concern:

- Elaboration of the National Strategy for Forest Conservation and Development.
- Inventory of plant and animal species and identification of sites of biological and ecological interest (SIBE). 177 SIBE have been identified over all the national territory and the realization of some of them is now initiated.
- Publication of regional or thematic vegetation guides (medicinal plants, pasture and forage plants, fiber plants, woody plants),
- Establishment of database related to wild plant genetic resources

4 Rangeland resource management

There are around 8 Million head livestock, which annually graze in the Moroccan forests (3.8 Million Caprine, 3.45 Million Ovine, and 0.75 Bovine. The average grazing duration in forest for this livestock is around 5 months. During this period, it is consumed, in normal climatic year, a total of 700 Million Forage Units(FU). In period of drought, the number of head livestock grazing annually in forest is twofold.

The average annual quantity of fodder grazed in the forest domain is 240 FU per ha. This has been calculated as a weighted average of the grazing in high forests (400FU/ha), coppices (300FU/ha), maquis/mattorals, shrubs(250FU/ha), plantations(100FU/ha), and sparto grass(100FU/ha). This gives a total fodder quantity of 23 Million FU grazed annually in the forests, equivalent to 7 Million tones of hay. The common FU market price in Morocco is around US$0.135 (Ellatifi, unpublished)

Grazing is one of the two more important rights recognized by the Moroccan forest law to local communities. This right is regulated by the following legislative texts:

1. Dahir of 10 October 1917, forming Moroccan Forest Code,
2. Vizier Decree of 15 April 1946, related to silvopastoral regime,
3. Decree of 15 April 1946, related to silvopastoral regime,
4. Dahir of 4 March 1925, forming special statute of the Argan forest,
5. Decision of 1st May 1938, jointly taken by the Director of Political Affairs and the Director of Waters and Forests, regulating users' rights in the Argan forest, and

6. Decision of 22 June 1936, jointly taken by the Director of Political Affairs and the Director of Waters and Forests, detailing the exercise of user's rights.

5 National Parks and Reserves

Institutional responsibilities for protected area management are well-established in Morocco. The agency with direct responsibility for protected area management is the AEFCS (Administration des Eaux et Forets et Conservation des Sols) within the Ministry of Agriculture. It has a well-established administration at regional and local level. The National Council for the Environment within the Ministry of the Environment provides overall policy guidance.

National parks / Biosphere reserves

Name	Area (in ha)
Toubkal (created in 1942 on 38,000 ha)	38,000
Tazekka (created in 1950 on 680 ha	12,000
Eastern Higher Atlas	49,000
Al Hoceima	47,000
Ifrane	53,000
Talassentane (Rif)	60,000
Souss-Massa (created in 1999	34,000
Dakhla	1,900,000
Lower Dra'a	
Iriqui (Higher Dra'a)	
Argan forest biosphere reserve (established 1998) 25687.8 km2	6,347,455
Oasis du sud marocain (established 2000) 71,854 km2	17,755,051
TOTAL	2,200,000 ha

Source: MCWF(1999).

In addition to these National parks and Biosphere reserves, there are 160 delimited sites of biological and ecological interest, on a total area of 1,080,000 ha.

1997 United Nations List of Protected Areas in MOROCCO

Biological Reserve

Khnifiss/Puerto Cansado	Ia	27°58'N/12°55'W	6,500	1962
Merja Zerga	IV	34°50'N/6°20'W	7,000	1978

Botanical Reserve

Talassantane	Ia	35°10'N/5°16'W	2,603	1972

National Park

Souss-Massa	V	30°12'N/9°37'W	33,800	1991
Toubkal	V	31°04'N/7°51'W	36,000	1942
Permanent Hunting Reserve				
Bouarfa	IV	32°30'N/1°59'W	220,000	1967
Iriki	IV	30°40'N/5°35'W	10,000	1967

6 Wildlife Resource Management

Game is state property in Morocco. Hunting/shooting is regulated by the Dahir of 21 July 1923 on the hunting police, and put under the control of the Forest Department (MCWF) whose forest officers exercise the hunting police, beside forest police and fishing (in terrestrial waters) police, country-wide. To enable game stock, the Forest Department manage permanent hunting reserves, as well as biannual reserves and annual reserves. In all categories of reserves, game shooting is strictly forbidden during the whole year.

Outside reserves, hunting exercise is possible during the opened shooting season. Every year, a decree enacted by the Minister in charge of Waters and Forests determines the shooting season's dates, the number of game "pieces" to be shot per hunter and per shooting day, by game category. Individuals as well as associations can, for a determined period, rent shooting right from the Forest Department, on determined state-owned forest areas ("amodiations").

In all cases, according to Moroccan regulations, hunters, to legally exercise their shooting activity, must:

- Be in possession of a permit for carrying firearms. This permit is issued by the local authorities (Department of Interior), and is renewed every year.
- Be in possession of a hunting permit for the game category(ies) to be shot. This permit is issued by the local forest service.
- Strictly observe the dates of the hunting season, as well the quota allowed per game category.
- Strictly observe shooting prohibition into hunting reserves (Ellatifi, 2002).

US $1.4 Million per year comes from hunting taxes and licenses paid by nationals. Another $5.0 Million per year comes from the hunting fees paid by foreign hunters.

7 Fresh water use and pollution

Considered a priority by the national environment strategy, resources in water in Morocco are confronted by problems of quantity and quality. Water resources are limited because of the semi-arid to arid climate in the major part of the territory. Existing water resources are degraded by domestic and industrial pollutions sources.

Irrigation is the main water use in Morocco representing close to 90% of the global consumption. Industry demand consumes 1.088 billion m3 of water of which 81% is seawater, 14% is surface water, 4% is from piped sources and 1% is underground water.

Drinking water demand currently uses more 700 millions of m3/year. Service rate is 80% in urban environment and 30% in rural environment where 70% of the population consumes less than 20 litres/day/person, or 1/6 of a city-dweller's daily consumption.

The constantly increasing demand in water is aggravated by the deterioration of water quality by pollution, the deterioration of the protective natural ecosystems, the increase in siltation rates of dams following erosion in serving watersheds as well as by episodic droughts of recent years.

Soil erosion is leading to the silting up of dams, with a loss of 50 millions m3 of storage capacity every year, equivalent to the potential irrigation loss of 5.000 ha/year.

The volume of the wastewaters produced in urban areas is estimated at 500 million ^{m3}. The part collected by sewer networks represents a volume of 370 million ^{m3} of which more of half is drained to the sea. The remainder is directed to the river network or spread on soil of which 60 million ^{m3} per year is reused at the raw state for the irrigation of near 7000 ha in the periphery of urban centers.

Existing water purification stations number 54, of which about 35% are effective. The impact of these facilities concerning pollution reduction is insignificant.

The industrial sector in Morocco generates important organic and toxic pollution. The volume of the residual waters is estimated in 1993 at 964 million ^{m3}, or 89% of the total volume used.

Chemical and para-chemical industries remain the most important source of water release with about 931 millions m3, either 97% of the total volume of waters released.

Textile and leather industries release 10 million ^{m3} of water and contribute the major part of chromium and sulphides pollution.

Agro-food industries release close to 22 millions m3, constituent 90% of the use of water of this sector. They contribute to pollution loads in organic matter (80% in DCO and 66% in DBO5) and by the quasi-totality of the pollution by nitrates and phosphorous;

Mechanical, metallurgic and electric industries releases, even though they are relatively small in volume, contain cyanide, which is a very toxic chemical even in weak concentrations (about 2 tons of cyanide).

The largest part of the organic industrial releases (DBO5) are poured in the Sebou basin and the Atlantic Ocean. The Sebou basin concentrates organic pollution due to the refineries as well as chromium pollution (or 56% of the total quantity) coming from the tanneries. The setting up by the Department of the Environment (PREM project) in Fès (Dokkarat) is going to reduce this Chromium pollution.

The basin of Tensift collects heavy metals coming from lead, zinc and copper mines.

The basins of Moulouya, the Loukouss, the Bou-regreg and the Souss Massa remain the less reached by the industrial dismissals. Agricultural pollution:

Pollution generated by the use of manures and products phytosanitaires in

agriculture is estimated at 8500 tons of nitrogen and 15 tons of pesticides. 8 to 10% of nitrogen used like manure are washed toward underground waters or toward the rivers and 0.5 to 1% of the products phytosanitaires join the rivers.

Details at http://www.minenv.gov.ma/reem/eau.htm

8 Marine Resource Management

For details see FAUNE AQUATIQUE CONTINENTALE (Invertébrés et Poissons)
http://www.minenv.gov.ma/biodiv/faune/sommaire.html and
http://www.minenv.gov.ma/biodiv/stramarine/stratmarine.htm

Morocco boasts two sea coastlines; the Atlantic Ocean and the Mediterranean Sea, extending over 3,500 km. Moroccan coasts contain an important richness of sea resources. The creation of the 200 nautical mile-long Exclusive Economic Zone (EEZ) has increased the maritime area under national jurisdiction to beyond one million km2.

The EEZ has allowed for a gradual modernization of coastal and traditional fishing activities, the birth of a young and active fleet for high sea fishing, the promotion and modernization of fishing industries, the expansion of the national commercial fleet and the intensification of scientific research in sea fisheries and maritime training.

With a fleet of 3,000 ships (Coastal fishing : 2,564 (72,148 TJB) High-sea fishing : 462 (152,417 TJB)) and thriving port facilities, Morocco is the most important producer and exporter of sea products in Africa and the Arab world.

The sea fisheries sector represents 15% of the overall value of exports and 55% of the value of food exports. It employs more than 200,000 persons. The annual value of fish products exports is estimated at more than 600 million dollars.

Total production of fisheries reached 635,193 tons in 1996, against 852,048 tons in 1995. The decrease of production is the result of a rigorous observance of a system of biologic rest periods by national and foreign fleet.

Major fishing ports are in Agadir, Tan-Tan, Essaouira, Safi, El-Jadida, Casablanca, Mohammedia, Rabat, Kenitra, Larache, Tangiers, El-Hoceima, Nador, Laayoune, and Dakhla.

The quest of a more rational exploitation of its sea resources has led Morocco to conclude, on new bases, a four-year long fisheries agreement with the European Union.

The agreement stipulates the gradual reduction of fishing activities of the European fleet, according to the various types of fishing.

It also provided for measures to encourage European fleet to unload catches in national ports and consolidate controls in order to carry out a better follow up of sea resources. Regarding financial compensation, the agreement stipulates that the

European Union pays 355 million ECU and contributes to developing the fisheries sector in Morocco.

The fisheries agreement with Russia was also renewed for three years. It authorizes 28 Russian ships to operate in Morocco's territorial waters for a maximum of 200,000 tons of catches of pelagic species in the first year while quotas for the subsequent years are defined according to the state of sea reserves

9 Biodiversity conservation in Morocco

Morocco, owing to its geographical and topographic locations hosts a diverse range of ecosystems from desert to permanent snowfields. It abuts both the Atlantic Ocean and the Mediterranean Sea and is sliced by both the Rif Mountains and three ranges of the Atlas Mountains. Man has farmed the country and harvested natural resources for over 2500 years substantially altering much of the country. There are 39 ecosystem types, ranging form various forms of mountain and lowland forests, grasslands and wetlands to coastal lagoons, beaches and marine environments.

The principal threats to biodiversity are habitat transformation, fragmentation and degradation, due to increasing population pressures and poor management of natural resources. 49% of Morocco's population are rural, but they account for 70% of the country's poor. 85% of household energy consumption is from fuelwood. Urbanization, industrialization and tourism in coastal areas have also transformed habitats. Less than 1% of the land area currently comes under some form of protection.

1997 IUCN Red List of Threatened Animals Number of threatened species in each group of animals in each country/area (Critically Endangered, Endangered and Vulnerable categories)

Country	Mammals	Birds	Reptiles	Amphibians	Fishes	Inverts
Morocco	18	11	2	0	1	7

1997 IUCN Red List of Threatened Plants: Globally threatened vascular plants: IUCN category by country

Country	Ex	Ex/E	E	V	R	I	Total no. threatened	No. species	% threatened
Morocco	1	0	3	3	157	23	186	3,675	5.1

8.1 Terrestrial biodiversity (in-situ)

Threatened Species: The following list includes all mammals which occur in Morocco and are rated as Critically Endangered (CR), Endangered (EN) or Vulnerable (VU) in the 2000 IUCN Red List of Threatened Animals. An asterisk (*) indicates a change from the 1996 Red List to the 2000 Red List.

- Critically Endangered:
  - *Addax (*Addax nasomaculatus*). (Not listed in 1996 in Morocco.) (Rated Endangered in the 1996 Red List.)

    - Hoogstraal's Gerbil (*Gerbillus hoogstraali*). (Endemic to Morocco.)
    - Mediterranean Monk Seal (*Monachus monachus*).
    - Occidental Gerbil (*Gerbillus occiduus*). (Endemic to Morocco.)
- Endangered:
    - Cuvier's Gazelle (*Gazella cuvieri*).
    - Dama Gazelle (*Gazella dama*).
    - Northern Right Whale (*Eubalaena glacialis*).
- Vulnerable:
    - Barbary Macaque (*Macaca sylvanus*).
    - Barbary Sheep (*Ammotragus lervia*).
    - Cheetah (*Acinonyx jubatus*).
    - *Dorcas Gazelle (*Gazella dorcas*). (Rated Lower Risk: Near Threatened in the 1996 Red List.)
    - *Eurasian Otter (*Lutra lutra*). (Not listed in 1996.)
    - Geoffroy's Bat (*Myotis emarginatus*).
    - Greater Short-tailed Gerbil (*Gerbillus maghrebi*). (Endemic to Morocco.)
    - Harbor Porpoise (*Phocoena phocoena*).
    - Lesser Horseshoe Bat (*Rhinolophus hipposideros*).
    - *Lion (*Panthera leo*). (Not listed in 1996 in Morocco.)
    - Long-fingered Bat (*Myotis capaccinii*).
    - Mediterranean Horseshoe Bat (*Rhinolophus euryale*).
    - Mehely's Horseshoe Bat (*Rhinolophus mehelyi*).
    - Western Barbastelle (Bat) (*Barbastella barbastellus*).

Total number of mammal species: 105 *(Groombridge & Jenkins 1994)*
Number of endemic species: 4 *(Groombridge & Jenkins 1994)*
Number of threatened species: 1996: 18 (17 % of total species) (*IUCN 1996*); 2000: 21 (20% of total species) *(IUCN 2000)*

Morocco is quite rich in bird life owing to its broad diversity of ecotypes as well as it's transitory position for migratory birds between Europe and Africa. Morocco boasts 19 orders representing 75 families and 451 species. This is about the same number of species as the contiguous US for an area the size of California. An excellent review of Morocco's avifauna called "Biodiversite des oiseaux" by Riad Essolh Baouab is available at http://www.minenv.gov.ma/biodiv/oiseaux/SOMMAIRE.htm

The diversity in relief and climate confine to Morocco a rich biodiversity with a large numbers of ecosystems and rich flora. This counts for over 4500 species of higher plants (with 135 plant families, 940 genera and over 600 plant taxa as endemic), with about 200 species considered as rare or threatened species.

8.2 Agricultural biodiversity

The agricultural sector in Morocco plays an important role in the country's economy since it contributes to 17% of Gross Domestic Product (GDP) and occupies near to the half of the active labor force. However, the production varies with the climatic conditions. The land classification in Morocco shows that 78% of the area (56 millions ha) are located in desert and dry zone (<250 mm/year), 15% (10 millions ha) are in the semi arid zone (250 to 500 mm/year) and 7% are in the sub-humid to humid zones (> 500 mm/year). The arable land represents 12% (8.5 millions ha) of which 1.2 millions ha are irrigated, forest 12.5%, pasture 36% and other lands 39%.

Land Use of Morocco

Land use	Area (ha)	(%) of total area
Forest Domain (forest, alfa)	8.969.600	12,6
Arable land	8.456.000	11,8
Rangeland & Wasted Lands	54.074.400	75,6
Total Land area	71.500.000	100 %

Increasingly, the country is considered as center of diversity for a number of cultivated crop plants and wild relatives. The most occurring genera are: *Avena, Medicago, Lupinus, Trifolium, Aegilops, Phalaris, Hordeum, Triticum, Lathyrus, Ononis, Vicia, Astragalus, Bituminaria, Lotus, Stipa, Eragrostis,* and *Beta.*

This diversity, however, is undergoing genetic erosion due to several factors. Overgrazing of pastoral resources and the deforestation caused by demographic pressure, irregularity of rainfall distribution and changes in cultural practices have resulted in the reduction of natural diversity of several species.

Plant genetic resources activities in Morocco are organized in a multi institutions program under the authority of the Ministry of Agriculture, Rural Development and Fisheries and the Department of Forestry. The leading institutions are the National Agronomic Research Institute (INRA), Agronomic and Veterinary Hassan II Institute (IAV Hassan II), National Forestry Research Center (CNRF; Forestry Department), Livestock Directorate (DE), Plant Protection Directorate (DPVCTRF), Plant Production Directorate (DPV), National Agricultural School (ENA) and Forestry School (ENFI).

The scientific activities are coordinated by the National Plant Genetic Resources Committee (NPGRC) which has been established in 1992. The coordinator and other members of the NPGRC are also participating to the National Environmental Council meetings and are heavily involved in the preparation of the National Biodiversity Strategy and Workplan.

About 746 species (2600 varieties/clones) of vegetatively propagated crops, fruit trees and perennial forage and pasture species are maintained in field genebanks. The National Agronomic Research Institute (INRA) maintains a large diversity of fruit trees, while the perennial pasture and fodder shrub species are preserved in field genebanks at the Centre de Production des Semences Pastorales (Plant Materials Center) in El Jadida. The Botanic garden of IAV Hassan II has just started with over 100 wild species, with the purpose of education, public awareness along with the conservation of rare and threatened wild flora.

Concerning on-farm conservation of landraces, the scientific basis for this type of conservation is only recently investigated. Morocco, in collaboration with IPGRI and BMZ, is carrying out a project to strengthen the scientific basis of *in situ*

conservation of agricultural biodiversity. The Moroccan component is part of the IPGRI global collaborative project launched in nine countries among which Morocco is chosen to work on cereals, alfalfa and faba bean. (Tazi, M 1999)

More detail at Microbiologie, Biotechnologie et transfert des technologies.

9 Legislative and policy environment

9.1 Legislation

Though slightly dated it should be noted that the environmental code is available on the web Code de l'environnement (version informatisée) Projet de gestion del'environnement - lot 1. Secretariat d'etat charge d e l'environnement, Ministere de l'amenagement du territoire, de l'environnement, de l'urbanisme et de l'habitat mars 1999 Rabat at http://www.minenv.gov.ma/documentations/Code%20de%20l'Environnement.zip

In addition see Draft Law on EIA and Draft EIA Operational Directive

The forestry sector is governed by a high quality set of technical and legislative texts, but these texts do not reflect the new reality of the need for management of the relationship between local populations and the forests on which they are dependent. These texts need to be reviewed and changes made in order to create adequate incentives and increase the collaboration of local communities.

9.2 Participation in multilateral conventions

Morocco is signatory to most major environmental conventions including:

- CITES January 14, 1976
- Ramsar Wetlands Convention October 20, 1980
- Convention on Biological Diversity June 13, 1992
- See http://www.minenv.gov.ma/biodiv/biod1.htm
- International Agreement for the Creation of an International Office for dealing with Contagious Diseases of Animals at Paris
- Convention on the International Maritime Organization
- Statutes of the International Union for Conservation of Nature and Natural Resources (as amended)
- Agreement for the Establishment of a General Fisheries Commission for the Mediterranean
- Convention for the Establishment of the European and Mediterranean Plant Protection Organization
- International Plant Protection Convention
- International Convention for the Prevention of Pollution of the Sea by Oil, 1954, as amended in 1962 and 1969
- International Convention for the Safety of Life at Sea
- International Convention for the Conservation of Atlantic Tunas
- Agreement for the Establishment for Arab Centre for the Studies of Dry and Barren Land
- African Convention on the Conservation of Nature and Natural Resources

- International Convention relating to Intervention on the High Seas in Cases of Oil Pollution Casualties
- Agreement for the Establishment of a Commission for Controlling the Desert Locust in North-West Africa
- Convention on Wetlands of International Importance especially as Waterfowl Habitat
- Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter
- International Convention for the Safety of Life at Sea
- Protocol for the Prevention of Pollution of the Mediterranean Sea by Dumping from Ships and Aircraft
- Convention for the Protection of the Mediterranean Sea against Pollution
- Protocol concerning Co-operation in Combating Pollution of the Mediterranean Sea by Oil and other Harmful Substances in Cases of Emergency
- Convention on the Conservation of Migratory Species of Wild Animals
- International Plant Protection Convention
- Convention on fisheries cooperation among African States bordering the Atlantic Ocean
- International Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, particularly in Africa
- Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean
- Agreement on the Conservation of African-Eurasian Migratory Waterbirds
- Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972
- Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area

10 Institutional responsibilities

10.1 Government institutions

In response to growing rural poverty, the objectives of equity and inclusion have been repeatedly stressed by King Mohammed VI and have become integral parts of the Government's program. The 2020 Rural Development Strategy provides the operating principles to achieve these objectives: decentralization, integration and participation. The National Forestry Plan applies these principles to sustainable management of forest resources in the common interest. The main new approaches adopted are:

- a decentralized approach, in which decisions on programs and budgets are delegated to lower levels, closer to the field an integrated approach, in which the needs for sustainable forest management and environmental protection are matched with the need for the economic and social development of the populations of the area.
- a participatory approach, in which the recognition of mutual interests and rights is completed by the development of mechanisms for giving local populations
- a say in decisions a partnership approach, in which the MWF works together with other agencies (particularly Agriculture, Equipment, and social ministries) and with civil society (national and local NGOs)

In recent years, awareness of linkages between development activities and biodiversity degradation has grown in Morocco, supported by a number of participatory assessments and studies undertaken during formulation of the National Environmental Action Plan. A legal framework to carry out systematic environmental impact assessments is being established. A comprehensive study of Morocco's biodiversity and protected areas was completed in 1996 with the support of the African Development Bank. It proposes a comprehensive strategy and investment plan for extending Morocco's protected area network and conserving its biodiversity

With regards to biodiversity management, the Government prepared a National Strategy for Protected Areas (NSPA) in 1996 which is serving as the basis for biodiversity conservation in protected areas. The strategy lists five priority objectives to be achieved in 20 years with three priority objectives of: (i) improved socio-economic conditions of the rural populations; (ii) protection of the country's biodiversity; and (iii) increased forest based services for use and enjoyment by the urban and rural populations for achievement in the first five years. Improved protection of biodiversity was also identified as one of the five key objectives in the National Forestry Plan (NFP).

The Ministry of the Environment maintains a “Inventaire Des Projets Lies A L'environnement” by 25 environmental sectors, which is available at http://www.minenv.gov.ma/reem/baseinv.html including the following under “Biodiversity/parks”

1. Etude de Définition d'un Réseau d'Aires et de Sites Protégés et l'Elaboration de Plans de Gestion des Parcs Nationaux du Maroc.
2. Projet de Réhabilitation du Lac Iriki et Création d'un Parc national
3. Assistance à la Gestion des Ressources Naturelles et des Parcs Nationaux :Toubkal et Tazekka
4. Gestion de l'Environnement dans le Parc Sous- Massa.
5. Projet Parc National du Haut Atlas.
6. Plan de Gestion du Parc d'Al Hoceima
7. Projet de Conservation des Ressources Naturelles et Création de Parcs Nationaux:MOR/AGR/0049
8. Etude Nationale de la Biodivérsité au Maroc
9. Projet de Conservation des Ressources Naturelles (MOR/NAT/0037). and the following under “Forests”
10. Etude du Bois de Feu au Maroc.
11. Inventaire Global des Bois Marocains.
12. Inventaire Forestier du Maroc.
13. Projet de Développement Foréstier (Deuxième phase, MOR-7752- 1990)
14. Lutte contre les Incendies Forestiers .
15. Projet d'Etude de Révision de l'Aménagement de la Forêt de la Mamora. FAO/GCP/ MOR/010 DEA
16. Projet de Développement Agricole du Moyen- Atlas.
17. Utilisation des Images Satellites pour le Suivi de la Déforestation au Maroc.
18. Développement Forestier et Lutte contre l'Erosion. MOR/AGR/0017
19. Valorisation de la Forêt et de la Faune. MOR/AGR/0079
20. Amélioration , Multiplication et Conservation d'Espèces Forestières. MOR/AGR/0107

10.2 NGO institutions

The "Blue Plan for the environment and development in the Mediterranean" receives support from three ministries and includes representatives of the national and regional partners of the host countries most likely to provide concrete help in its activities on a Mediterranean-wide level

The Ministry of the environment maintains a “Liste des ONG Marocaines actives dans le domaine de l'environnement” at their Web site :
http://www.minenv.gov.ma/partenariats/ong/listeong.htm

See also Annex 2: Institutions and contacts

10.3 Multilateral institutions

The government of Morocco with the assistance of the World Bank and the Global Environment Facility have active and in development projects for forestry development and protected area management.

Morocco: Protected Areas Management Project
GRANT AMOUNT: GEF— US$9.8 million equivalent *approved* January 27, 2000
PROJECT DESCRIPTION: This project will help the government of Morocco in the establishment and management of a network of national parks and reserves to conserve globally significant ecosystems and species in Morocco. Project activities will include strengthening national capacity for implementation; preparation and implementation of management plans for three national parks and 10 reserves; and, promoting public awareness and education. As broad based training in conservation management will also be provided to forestry staff, the project will also support the mainstreaming of biodiversity conservation in forest planning and management. *For more information, call Hanan Dowidar at (202) 473-7199, fax at (202) 522-0003, or e-mail Dhanan@worldbank.org. See http://www4.worldbank.org/sprojects/Project.asp?pid=P048314*

Sustainable Coastal Tourism Development Project
In line with the strategic context, of achieving growth, by enhancing competitiveness, and fostering a dynamic private sector, the Sustainable Coastal Tourism Development Project in Morocco, will evaluate the institutional framework, and contractual procedures for managing public/private partnerships, to develop integrated, and sustainable coastal sites, underlining the importance of tourism, as a viable mean of employment generation, foreign exchange, and tax revenue increases. The components include: 1) preparation of indicative development plans, and pre-feasibility studies for three new coastal tourism development sites. A conceptual plan for the whole tourism development site will be produced, in addition to indicative development plans, and pre-feasibility studies for the selected Tourism Development Unit, and for the selection of private master developers; 2) technical assistance (TA) to the Department of Development and Investment of the Ministry of Tourism, namely for the supervision, and management of the three new coastal tourism development sites, in addition to three on-going development sites. TA will help prepare indicative development plans, evaluate the private developers' proposals, and, prepare preliminary contract agreements; and, 3) technical assistance to implement the new institutional framework for tourism sites development. See http://www4.worldbank.org/sprojects/Project.asp?pid=P065757

Pilot Fisheries Development Project The Pilot Fisheries Development Project will support the objectives of the Country Assistance Strategy (CAS), encouraging private sector development, through the promotion and competitiveness increase of the fisheries sector. Further objectives call for public sector reform, which the project will address through decentralization and private sector initiatives. Social and rural development strengthening will be reinforced through expansion of small-scale and coastal fisheries development. The project contains two main components, as follows: 1) strengthening the institutional capacity of the Ministry of Marine Fisheries (MOMF) to manage and develop the fisheries sector. This component includes institutional reforms, supporting decentralization and organizational restructuring, in addition to an administrative reorganization. The decentralization process will improve with the inclusion of an integrated management information systems, providing computer equipment and technical assistance. Furthermore, major sectoral planning will include monitoring and coordination of future fisheries development, and will support the creation of the Unit for Women's Advancement, quantifying the role of women in the sector; 2) pilot marketing development will support the fishing fleet upgrade, and improve landing conditions. In addition, marketing and processing conditions will also be improved. See http://www4.worldbank.org/sprojects/Project.asp?pid=P052247

Rainfed Agriculture Development: The overriding goal of the project is to promote sustainable agricultural development in rain fed areas that will help reduce the rural-urban gap. To this end, the proposed project would have the following specific objectives: (a) to build institutional capacity in rain fed areas for project identification and implementation in partnership with local organizations; (b) to improve the livelihoods and incomes of the local population in four priority areas; and (c) to reduce the vulnerability of the production systems to drought. Negotiations were tentatively scheduled for 22 January 2003. Environmental Assessment Category B. PID: MAPE69124. US$ 27.3 (IBRD). Consulting services to be determined. Ministry of Agriculture, Rural Development, Water and Forests, Tel: (212-37) 29-99-45, Fax: (212-37) 69-84-34, Contact: M. Benmakhlouf, Director of Land Development. World Bank Agriculture 69124. See http://www4.worldbank.org/sprojects/Project.asp?pid=P069124

Asset Management Reform: The project will support the government's use of established norms and strategic criteria to manage real property assets (public lands and buildings). Negotiations were tentatively scheduled for mid-February 2003. Environmental Assessment Category C. US$ 30.0 (IBRD). Consultants will be required. Direction des domaines, Ministère de l'économie et des finances, Quartier administratif, Rabat, Maroc, Tel: (212-7) 77-11-72, Fax: (212-7) 77-92-82, Contact: Mr. A. Chaou-Roqai. World Bank Public Sector Management 5516. See http://www.worldbank.org/pics/pid/p005516.txt

Integrated Forestry: The objective of the project is to improve the management of biodiversity and natural resources. This will be achieved by (a) sustainably managing forest, water and soil resources and improving agricultural production in peri-forestry areas; (b) improving socio-economic conditions of the rural population; (c) protecting the country's biodiversity; (d) increasing industrial and artisanal wood production; and (e) enhancing forest based services for people's use and enjoyment whether from cities or the countryside. In addition, improved carbon storage resulting from increased vegetative cover and better forest management will contribute to reducing net emissions of greenhouse gases. Project preparation is under way. Environmental Assessment Category B. US$ 10.0 (IBRD). Consultants

will be required. Ministère chargés des Eaux et Fôrets, Quartier Administratif, BP 607, Rabat, Morocco, Fax: (212-37) 768-496, Mr. M. Anechoum, Secretary General. World Bank Rural Development 75561. See http://www4.worldbank.org/sprojects/Project.asp?pid=P075561

Biodiversity Conservation in Bas Draa National Park Project. Objectives
The first phase of the project would support three key development objectives, which are to: (i) build institutional capacity for developing and implementing the programs. Particular emphasis is on communication, the participatory approach, and the legal and institutional changes that will encourage the pairing of sustainable forest management with the socio-economic development of the local population. The main institutions concerned are the Ministry of Forestry and Water (MWF) under the Ministry of Agriculture, Rural Development, Water and Forests (MADREF), participating organizations and beneficiaries; (ii) improve the living conditions of local people in three important forested areas where the participatory and partnership approach will be developed; and (iii) (under a GEF-assisted component) set up the proposed Bas Draa national park, a site of international importance for its biodiversity, and where the participatory and partnership approaches will also be applied. See http://www4.worldbank.org/sprojects/Project.asp?pid=P068904

Morocco's United Nations Development Program Global Environmental Facility Small Grants program has 29 active projects in Morocco totaling $935,538 and ranging from a low of $1,238 to a high of $50,000 for L'énergie du vent et ses applications : Lamdint village modèle en matière d'utilisation des énergies renouvelables. See the full listing at http://www.undp.org/sgp/cty/NORTH_AFRICA_MIDDLE_EAST/MOROCCO/ov.htm

Transhumans for Biodiversity Conservation in the Southern High Atlas: The project will conserve globally significant biodiversity in the southern flank of the High Atlas through an adaptive management scheme integrating pastoral range management with biodiversity conservation in a grazing-dependent ecosystem. Simultaneous global and local benefits are expected, which would ensure both a demonstration effect and a self-sustaining local process after project completion. Threats to biodiversity are rooted in imbalanced incentives towards indiscriminate settlement, conversion of wetlands and common pastures for crops, reduced mobility of livestock, and lack of awareness. $4.37 million. See also Transhumans for Biodiversity Conservation in the Southern High Atlas

Integrated Pastoral Range Management for Biodiversity Conservation and Sustainable Development . This PDF "B" project aims at formulating a project brief for biodiversity conservation and sustainable development through integrated pastoral range management in the drylands of the Atlas Mountains of Morocco. $117,000

REGIONAL : Participatory Management of Plant Genetic Resources in Oases of the Maghreb . The project focuses on in-situ conservation of the indigenous (landacres) species in the region that is important for maintaining oasis ecosystem stability and also contributes to soil stabilization, shade, and shelter from high winds. The project will provide in-situ conservation of within-species diversity through partnerships with farmers , scientists, and government authorities. $2.778 million

REGIONAL: Conservation of Wetland and Coastal Ecosystems in the Mediterranean Region . Morocco The long term goal of the project is to build the capacity of the

beneficiary countries in the Mediterranean region to conserve threatened biodiversity in coastal and wetland ecosystems within the framework of sustainable coastal development. At the local and national levels, the project will address the main threats to biodiversity identified in the different sites/countries focusing on land use policies, natural resource use and management policies, institutional capacity building, local participation, and support to alternatives for sustainable socio-economic development. All these aspects have also been identified as priorities at the regional level. Fiche du projet $13.273 million

Appui à la mise en oeuvre de la Convention de lutte contre la désertification et la sécheresse

Appui à la protection de l'environnement, à la gestion des ressources naturelles et à la promotion des énergies renouvelables et de substitution

Biodiversity Enabling Activity
1997 - Grant - US$191,200

Clearing House Mechanism Enabling Activity
1998 - Grant - US$10,000

Conservation Nature Dans Foret De Ma
1997 - Grant - US$69,075

Jornadas Cientificas De Campo Sobre Zonas Humedas Del Norte De Marruecos
1997 - Grant - US$8,879

Protected Areas Management
1998 - Grant - US$10,100,000

10.4 Bilateral institutions

10.4.1 USAID

The existing USAID Morocco Strategy for the Environment focuses on water management

The economy of Morocco depends largely upon renewable natural resources, the most important of which is water. Moderate expansion of Morocco's network of dams and reservoirs can increase the supply of water by one-fourth. The projected doubling of the population over the next 30 years, however, means massive increases in demand with corresponding decreases in per capita availability. Consequently, fresh water must be managed more efficiently.

Water scarcity due to irregular rainfall patterns and increasing use affects economic and social realities in Morocco: food security, access to potable water, opportunities for economic growth, the health of the population, and the environment.

Better water management through improved decision-making leads to more equitable distribution of water, helps increase its availability, raises economic returns

from the agriculture sector, and mitigates social disruptions that are likely to stem from resource depletion.

USAID is helping to establish the Souss-Massa River Basin Authority. This RBA will be directed by a council of representatives of national, regional and local government agencies, private sector agricultural and industrial interests, NGOs, and citizens' groups. By enabling local people to make decisions on the use and availability of a scarce resource, the Souss-Massa RBA will become a model public-private partnership for water management.

Morocco and the United States signed Feb.05, 2003 a cooperation agreement providing for promoting rural tourism through programs worth 78.6 million Dirhams (about US$ 8 million). The agreement, initialed by Moroccan tourism minister, Adil Douiri and US ambassador to Morocco, Margaret Tutwiller, means to support Morocco's efforts to meet the international market needs. The agreement includes several actions, mainly a US$ 2.2 million-worth program for the development and promotion of new tourism products in rural areas, a program -valued at about US$ 900,000-worth- to encourage micro-finance for rural populations and a US$ 4.8 million to upgrade tourism infrastructure in Morocco's countryside. Morocco has set a target to attract 10 million tourists by 2010 and will be endeavoring to promote new products that cater for ecological concerns and develop the kingdom's cultural legacy.

10.4.2 Peace Corps

The Peace Corps program is presently suspended and the volunteers have been evacuated to the US.

Volunteers in the environment Sector are assigned to work with the Ministry of Agriculture and Rural development and the Ministry in charge of Water and Forests. They work with their Moroccan counterparts to (1) to assist in implementing formal and informal environmental education activities in rural community development. (2) To promote sustainable natural resources conservation and management practices, preserve biodiversity, and to combat desertification through the promotion, capacity building, and implementation of agroforestry, soil conservation and reforestation. (3) To reduce the environmental impacts of rural through the introduction of appropriate technologies for income generation.

10.4.3 The Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH

Management of environmental problems has become a major component of German-Moroccan cooperation. Promotion measures include updating the national legislation pertaining to the environment and its implementation, cooperation between the government and private industries in this field, and organising waste management in the industrial and municipal sectors. Drinking water supply is to be secured by measures protecting water catchment areas.

In the field of rural development, support is being provided for sustainable management of natural resources in the Souss-Massa-Drâa region in the South of the country. Key areas of assistance comprise desertification control in the Drâa Valley and promoting cultivation and protection of the argan tree. Advisory services on the protection of natural resources are being provided at national level and in three national parks. Private-sector structures and service systems in the agricultural

sector are to be strengthened by supporting professional organizations, as well as by promoting cooperation between state and the private sector.

In preparation is a project for “Realisation of national plans for the fight against desertification”

11 Conclusions

The USAID planned focus of promoting economic growth and international trade provide multiple opportunities to achieve those goals while protecting forest resources and biodiversity.

The linkages with Agriculture, including fish, include protecting land races of crops, and conducting activities in an environmentally sound manner. In the promotion of tourism, the scenic and wild places tourists come to visit need to be protected from being soiled while at the same time tourism will have to be managed so that increased use of fragile environments does not lead to their deterioration.

Annexes

Annex 1: Abstract Bibliography
Annex 2: Institutions and contacts

Annex 1: Abstract Bibliography

Booth, Greg, Joy Hecht, et al. 1995. Environmental options assessment for Morocco. Chemonics International for USAID/G/ENV/EET PRIDE ANE-0178-Q-00-1047-00 398-0365 PN-ABY-673.

To help USAID/Morocco develop a major environmental program, this report identifies and prioritizes Morocco's environmental programs, using an approach under development by USAID that is based on the U.S. Environmental Protection Agency's comparative risk assessment methodology. The study team organized environmental problems around the sectors of economic activity that produced them (industry, mobile sources, households, agriculture, and natural-resource based activities); assessed the impacts of each problem on health, the economy, and ecosystems; and developed criteria to evaluate the importance of each impact. For health, these were three: the severity of the health impacts, the number of people affected, and reversibility effects. For the economy, there were two criteria: total cost and the timing of that cost. Natural ecosystem effects were evaluated in terms of: the severity of ecosystem damage, whether the ecosystem is common or unique, the extent of human dependence on the ecosystem for non-marketed services, the number of people dependent on the ecosystem, and the timing of impacts. The team scored each problem according to each criterion on a scale of one (minimal impact) to five (serious impact), averaging the scores to develop a composite indicator of the importance of each problem area relative to the others. The team also identified possible project activities to respond to these problems, reviewing each activity according to eight criteria: the importance of the problems to which it responds (which is the composite score on the problem assessment), its potential impact on those problems, the priority of the problem to the Government of Morocco, the priority of the problem to USAID, U.S. comparative advantage, trade and investment opportunities, sustainability, relation to other donor activities, and support to NGOs and women's groups. The major project options evaluated included: (1) protected zones for drinking water intake; (2) sanitary landfill management; (3) management support for sewage collection and treatment; (4) integrated watershed management; (5) eco-tourism development in Morocco's interior; (6) artisanal tannery improvement; (7) air quality improvement and monitoring; (8) phosphate processing emissions elimination; (9) industrial pollution prevention; (10) water erosion of soils; (11) dune encroachment control; (12) Oum er Rbia River catchment basin management and environmental quality; and (13) Sebou integrated management plan. (Author abstract, modified)

Duvall, LeRoy. 1988. Status of biological resources in Morocco : constraints, and options for conserving biological diversity. USAID PN-ABG-162.

Despite a large system of national parks and preserves, Morocco's biological resources are suffering serious degradation. The country's protected areas system has had only marginal success in protecting wildlife, and habitat destruction continues at a rapid rate. Although the current status of most indigenous species is not actually known, most of Morocco's large mammals are thought to be endangered, as are many birds and plants. This study examines the status of biodiversity in Morocco, including the main threats to it, and proposes steps to arrest its decline. The report begins with a brief summary of the status and management of Morocco's protected areas. It then provides site by site descriptions of Morocco's two national parks; eight wildlife reserves; two botanical reserves; two managed nature

reserves; and 80 reserves closed to hunting. The status and protection of endangered species, including birds, mammals, and plants, are examined, followed by a discussion of conservation efforts outside of protected areas, particularly in biologically important wetlands. Next, the major threats to biodiversity are considered, such as a fixed resource base, a rapidly increasing population, and a tradition of unrestricted use of public resources. The report's recommendations include: the development of national environmental priorities; increased environmental impact assessments; institutional strengthening; new legislation; improved training of resource managers; and increased environmental research. The concluding section focuses on areas where international donors could lend their support. Includes a bibliography and lists of endangered species.

Ministere de l'Environment du Maroc. 1996. Profil du Maroc: Application de'Action 21: Examen des progress accomplis depuis la Conference des Nations Unies sur l'environment et le developpement, 1992. 63pp.
http://www.un.org/esa/earthsummit/maroc-cp.htm

Parker, S.A. 1980. Draft environmental report on Morocco. Arid Lands Information Center, Office of Arid Land Studies. Univ of AZ, Tucson, AZ prepared for National Park Service Contract CX-0001-0-0001 with US Man and the Biosphere Secretariat, Dept of State, Washington, DC. USAID PN-AAH-874. 96pp.

Desertification due to accelerating population growth rates and heavy dependence on agriculture has become a growing threat to the economic and ecological balance of many developing countries. To address this situation, environmental investigations, such as this draft environmental report of Morocco, are urgently needed. The report consists of an introductory description covering Morocco's geography, population, and economic characteristics, followed by an examination of the country's environment and natural resources, including flora, mineral resources, soils, water resources, legislation governing the environment and natural resources, and relevant organizations. In addition, demographic and economic characteristics are enumerated in various tables, and maps are presented to illustrate geological, vocational, and agricultural features. Currently, Morocco is confronted with a number of environmental problems. Population increases and pollution from urban sewage and oil are straining the environment. Soil erosion has accelerated due to overgrazing and poor water management practices. Vegetative denudation has resulted from grassland and forest destruction. Inappropriate water management practices used in irrigation projects have caused silting of reservoirs and indirectly increased the incidence of malaria and bilharzia. Ignorance of small-scale water management methods has resulted in watershed destruction while loss of habitat and other hunting pressures have caused widespread wildlife destruction. Morocco has environmental legislation that addresses some of these problems, but overcoming resistance to changing traditional land use practices destructive to the environment poses perhaps the greatest obstacle to enforcement. Appended is an extensive bibliography of English and French sources on Africa (1954-75) and Morocco (1960-78), as well as on development (1964-78), environment and natural resources management (1960-79), fauna and flora (1967-78), geology (1963-79), mineral resources (1947-79), range management (1966-78), soils (1968-77), and water (1967-79).

Al Akhawayn University, School of Science and Engineering. 1999. First International Conference on Biodiversity and Natural Resources Preservation Book of Abstracts. Ifrane, Morocco. 160pp.

Moussouris, Yorgos and Alan Pierce. 2000. Biodiversity links to cultural identity in southwest Morocco: The situation, the problems and proposed solutions. Arid Land Newsletter 48. Nov/Dec 2000. 13pp.
http://ag.arizona.edu/OALS/ALN/aln48/moussouris&pierce.html

Tazi, M, A. Birouk , H. Mellas & M. Maghnouj. Plant genetic resources conservation and documentation in Morocco. Prepared on behalf of the PGR National Committee. Report of the Technical Meeting on the Methodology of the World Information and Early Warning System on plant Genetic Resources (WIEWS) held at the Hassan II Institute of Agronomy and Veterinary Medicine Rabat, Morocco 1st to 3rd February 1999 http://apps3.fao.org/wiews/Morocco/Paper6.htm

BAOUAB, Riad Essolh. Biodiversite des oiseaux. Ministry of the Environment
http://www.minenv.gov.ma/biodiv/oiseaux/SOMMAIRE.htm

Ellatifi, Mohammed. 2002. Answers to some questions regarding the Atlas cedar in Morocco (Cedrus atlantica Manetti) http://www.gratisweb.com/ajdeer/cedar.htm

MCWF (1999). The big book of the Moroccan forest. Edit. Mardaga, Hayen, Belgium

Blue Plan, 2001 Free trade and the environment in the Euro-Mediterranean context. First synthesis report for the Mediterranean Commission on Sustainable Development (MCSD). 56 p. The results of the activities of the working group on "free trade and environment in the Euro-Mediterranean context" were presented (See Draft report below) and discussed at the extraordinary meeting of the MCSD, Monaco, November 12th 2001

Akesbi, Najib. 2000. Aspects environnementaux des accords d'association signés entre l'Union Européenne et les pays méditerranéens non membres, Cas du Maroc. Blue Plan.

Jorio, Abdeljaouad. 2000. Modes de consommation, environnement et libre-échange au Maroc. Blue Plan

Ministry of the Environment. National Reports
Thematic Report on Mountain Ecosystems (French) (French)
Thematic Report on Protected Areas (French) (French)

Weidnitzer, Eva. 1995. Environmental policy in Morocco: institutional problems and the role of non-governmental organisations in The Middle Eastern Environment: Selected Papers of the 1995 Conference of the British Society for Middle Eastern Studies Edited by Eric Watkins. John Adamson Publishing Consultants Cambridge, England.

Annex 2: Institutions and contacts

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- Phone : +212 7 68 15 00
- Fax : +212 7 77 08 75
- E-mail: dpe@minenv.gov.ma
- Web site : http://www.minenv.gov.ma

Centre d'Information sur l'Energie Durable et l'Environnement (CIEDE)

36, Avenue Al Abtal

- Phone / Fax : +212 37 77 27 22
- Web site : http://www.ciede.org.ma/

Centre de Développement des Energies Renouvelables

Rue Machaar El Haram, Quartier Issil, BP 509 Guéliz, Marrakech, Maroc.

- Phone : +212 4 30-98-14/22
- Fax : +212 4 30-97-95.
- Email : cernet@cybernet.net.ma
- Web site : http://www.cder.org.ma/

Ministère de l'Agriculture, du Développement Rural et des Eaux et Forêts

Quartier Administratif, Place Abdellah Chefchaouni, B.P. 607 Rabat

- Phone : (037) 76 09 33 / 93 - 76 01 02
- Fax: 76 33 78
- Email : webmaster@madrpm.gov.ma
- Web site : http://www.madrpm.gov.ma/

http://www.agriculture.ovh.org/madrp.htm

Projet Renforcement des Capacités en matière de Changements Climatiques dans les Pays du Maghreb : Maroc, Algérie, Libye, Tunisie

Projet FEM/ PNUD

- Web site : http://www.projmaghrebcc.com/

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Fax: +212 37 76 28 41
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Permanent Mission of Morocco to the U.N.
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Aquarium de Casablanca
Institut Scientifiques des Peches Maritimes
2, Rue Tiznit Casablanca 01 MOROCCO
Director: Abdellatif Berraho
Phone: 212-2-279994

Moroccan National Office of Tourism
http://www.tourisme-marocain.com/english/indexen.htm

NGOs

Liste des ONG marocaines actives dans le domaine de l'environnement
Web site : http://www.minenv.gov.ma/partenariats/ong/listeong.htm

enda Maghreb
Contact: Ibrahim Magdi
196, Quartier OLM
Rabat Souissi (Maroc)
Tél : (212-7) 756.414 / 756.415
Fax : (212-7) 756.413
E-mail : coordination@enda.org.ma
Sites web : http://www.enda.org.ma http://www.enda.sn/english/actu.htm
Raises awareness amongst communities on the problems of desertification. Trains community animators on participatory rural development. Undertakes rural projects in partnership with local associations and government departments on the management of natural resources emphasising an integrated participatory approach.

Association développement de la vallee du Dra (ADEDRA)
Mr Elkarimi Ahmed
69 avenue Mohamedfd V Zagora
Zagora 45900 Morocco
Phone: + *212 44 84.79.71*
Fax: + 212 44 84.79.71/70.35
E-mail : adedra@iam.net.ma
Supports community-based organizations in natural resource management through the training of local people. Undertakes projects on reforestation. Aims to improve the traditional community irrigation systems and drainage systems. Mobilizes financial resources to support operations which preserve the natural resources.

Association Homme Environnement et Reseaux de Developpement (AHERD)
Massira 3 c 406
Marrakech 40000 Morocco

Phone*:* + 212 44 349 513
Fax: + 212 44 349 513
Carries out awareness programs in schools to discuss different environmental matters such as saving water, recycling, and the protection of trees. Elaborates studies on land degradation, irrigation systems and pollution. Participates in a programme to reduce women poverty. Organizes seminars on water sanitation.

Forum maghrébin pour l'environnement et le développement (FMED)
2 rue Zahla, B.P. 403
Rabat Morocco
Phone*:*+ (212 7) 72 74 06
Fax: + (212 7) 72 74 06
Promotes reforestation, particularly tree planting with an emphasis on palm growing, also organizes public awareness campaigns.

INAFORM
PO Box 20100
Casablanca
Morocco
Fax: +212-2-98 24 28
Promotes conservation of natural resources. Implements programmes of afforestation, watershed management and combating desertification. Endeavors to raise public awareness of environmental problems

WWF Mediterranean Programme
c/o WWF-Italy.
Tel: +39 06 844 97227, Fax: + 39 06 841 3866.
Website: www.panda.org/mediterranean.
On the Ground in Morocco

Environment and Sustainable Development in the Mediterranean area: *Active participants directory*: Morocco

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AACF (15)	AODC (123)	ATED (151)
AASDSC (52)	AOS (122)	ATUO (159)
AAZ (83)	ARGANIA pour la Culture	AWDLES (51)
ABDBO (61)	et le Développement (32)	CDER (175)
ABLDC (54)	ASAJEB (78)	CDUPE (176)
ACAF (85)	ASMAPE (382)	CJM (200)
ACDC (57)	Association DAY pour le	CMEPE (204)
ACDROM (62)	Développement	CRS/ Morocco (495)
ACEC (55)	et la Protection de	EA (268)
ADEM (141)	l'Environnement (60)	ECODEL (90)
ADL (147)	Association de	Enda Maghreb (265)
AE (24)	Développement	FADEF (277)
AELDC (95)	de la Vallée du Dra (63)	FES (308)
AESVT (86)	Association de protection	FMED (298)
AFEM (2)	de	FNST (312)
AFJEM (97)	l'environnement à Ksar El	FO Nord (297)
AHAF (101)	Kébir (69)	Fondation Marrakech 21
AID (50)	Association de Protection	(289)

AIDD (149) ALCESDAM (126) ALDC (102) ALMAE (11) AMAL (ex ACAET) (107) AMEDI (108) AMIADR (114) Amicale AL-JAZOULI (16) AMRASH (72) AMRE (106) AMSED (105)	de l'Environnement de la Wilaya de Tétouan (70) Association pour l'Homme et l'Environnement (148) Association Tazart pour le Développement Economique et Social (152) Association TILKAHYA pour le Développement Rural (153)	GERERE (337) HERD (364) Homme et Environnement (365) M&DL (427) NEF (444) Oasis Verte (120) Ribat al Fath (491) SPANA (507) Tichka (527) TWIZA (537) TWIZA - Section Tanger (538)

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